

No. 6,337,500); and claims 1-5 and 13-16 under 35 U.S.C. §102(e) over Ghoshal (U.S. Patent No. 6,034,408). These rejections are respectfully traversed.

Neither Suzuki, Deane, Nakaoka nor Ghoshal disclose or even suggest a thin film transistor including, *inter alia*, recombination centers which capture carriers formed in channel regions by part of crystal semiconductor films having a relatively low degree of crystallization among crystal semiconductor films that form the channel regions, as recited in claim 1, and as similarly recited in claim 17.

The Office Action asserts that Suzuki discloses recombination center 7,8. However, region 7S and 7D are lightly doped drain regions formed on a side of a channel area 3 of source and drain regions 4S and 4D, and a region 8, located between the lightly doped drain regions and the channel region, is a region in which no impurity is diffused. Thus, in contrast to the claimed invention, region 7S, 7D and 8 are not formed in channel regions. Further, the high concentration of impurity in the semiconductor device of Suzuki is technically different from the claimed relatively low degree of crystallization.

The high concentration of impurity in the semiconductor of Suzuki is also structurally different from the low degree of crystallization of the present invention. In Suzuki, the high concentration of impurity means that the area is doped with molecules of impurity material heavier than the other areas, but the doping rarely changes its crystallization. The highly doped area merely contains the larger number of the molecules among semiconductor molecules (i.e., Si). By contrast, the claimed relatively low degree of crystallization relates to a status of crystal grains forming the semiconductor film, which has nothing to do with the concentration of impurity. This claimed feature is formed by the specific treatment, i.e., by applying laser annealing to the semiconductor films that form the channel regions, as recited, in claim 8, but not by doping the impurity.

Thus, Suzuki does not disclose or even suggest the claimed invention.

The Office Action asserts that reference number 22 of Deane is a recombination center. However, reference number 22 of Deane actually refers to a semiconductor layer that provides a channel region 23, and reference number 20 refers to a layer of amorphous semiconductor alloy material that provides recombination centers. However, the layer 20 of Deane is not formed in channel regions, but instead formed underneath the channel region 23. Thus, Deane does not disclose or suggest the claimed invention.

Col. 9, lines 49-54 of Nakaoka disclose lattice defect regions 215 formed in the region between a channel region 214 and a drain region 210 by introducing thereto lattice defects at the center of recombination. Thus, Nakaoka's recombination center is located between the drain and channel. In contrast, the recombination center of the claimed invention is formed among crystal semiconductor films that form the channel regions. Thus, Nakaoka does not disclose or suggest the claimed invention.

The Office Action asserts that reference number 36 of Ghoshal corresponds to the claimed recombination center. However, reference number 36 of Ghoshal is not a recombination center, but is in fact a crack. See col. 8, lines 26-38 of Ghoshal. Thus, Ghoshal does not disclose or suggest the claimed invention.

Regarding new claim 19, none of the applied references disclose or suggest a thin film transistor including, *inter alia*, a channel region facing a gate electrode through a gate insulating film, the channel region having a partially distorted portion distorted in a thickness direction of the channel region, and a recombination center formed around the partially distorted portion, the recombination center having a relatively low degree of crystallization among crystal semiconductor films forming the channel region.

For at least these reasons, it is respectfully submitted that claims 1, 17 and 19 are patentable over the applied references. The dependent claims are likewise patentable over the

applied references for at least the reasons as well as for the additional features they recite.

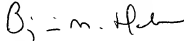
Applicants respectfully request that the rejections under 35 U.S.C. §102 be withdrawn.

IV. Conclusion

In view of the foregoing, applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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